

ORGANIZATIONAL FINANCIAL PERFORMANCE: IDENTIFYING AND TESTING MULTIPLE DIMENSIONS

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ABSTRACT

In general, this research addresses the measurement of organizational financial performance to provide researchers and managers a better understanding of the implications of selecting variables for use in empirical studies and management practice where organizational financial performance is the criterion of interest. Since no prior research has empirically established the domain of organizational financial performance, this research is by necessity exploratory in nature. A two part approach is adopted to address this problem. First, a model of overall organizational performance is inferred from empirical data that includes the primary constructs of an organization's financial performance and empirical measures of these constructs. Next, the validity and reliability of the constructs and measures are tested.

This is the first study that has undertaken to empirically identify both distinct dimensions of organizational financial performance and the measures that represent those dimensions. The identification of different dimensions and measures of financial performance for annual and three-year timeframes are unique contributions of this research.

Another significant contribution of this research is the identification of financial variables that discriminate between high and low performing companies. These measures should receive the primary attention of researchers, management and users of financial statements. Those companies that attain and sustain competitive advantage in the market do not strive to be average. Therefore, the metrics they use to gauge performance should focus on outcomes that set them apart from the competition.

INTRODUCTION

There is little dispute that one of the core purposes of both entrepreneurship and strategic management theory and research is the improvement of organizational performance (Eisenhardt & Zbaracki, 1992; Venkatraman & Ramanujam, 1986). However, there seems to be no consensus regarding the best, or even sufficient, measures of organizational performance. This is in no small part due to the many varied views on the most desirable outcomes of organizational effectiveness and because performance has often been characterized by the theory and purposes of the research being performed. Researchers further confound the problem by confusing determinants of performance with measures of performance (Cameron, 1986).

It has long been reported that different measures of organizational effectiveness and performance have been used in entrepreneurship and management studies with little or no thoughtful discussion of why the measures used in the studies were chosen. Little attention has been paid to the limitations that these measures may impose on the interpretation or generalizability of the results of the research, and most have concluded that organizational performance is multi-dimensional in character. The most frequently used measures of organizational performance are financial; however, no study has successfully proposed and empirically tested a generalizable multi-dimensional model of organizational financial performance. This is a particularly challenging issue since changing environmental conditions may dictate that different performance dimension priorities exist at different times. For instance, during economic recessions, liquidity may be more crucial than profitability, while during economic booms, profitability and growth may take precedence. This research examines the multi-dimensional structure of organizational financial performance and seeks to empirically identify distinct financial performance constructs and appropriate measures of those constructs.

The development of valid operationalizations of the key concepts and constructs used to form of both independent and dependent variables in the models used in entrepreneurship and strategic management research is fundamental to the description and corroboration of theoretical relationships being tested in research, and is the essence of the measurement stream of research. Put differently, the validity of research studies that use arbitrary dependent measures to represent overall organizational performance is highly questionable. Researchers need to know that the effects they are studying will reasonably be represented by the changes in the dependent variables. The use of different measures as proxies for “performance” makes extension from one study to the next dubious. Peter clearly summed up the importance of construct measurement as follows:

Valid measurement is the *sine qua non* of science. In a general sense, validity refers to the degree to which instruments truly measure the constructs which they are intended to measure. If the measures used in a discipline have not been demonstrated to have a high degree of validity, that discipline is not a science (1979:6).

Measurement is the “careful, deliberate, observations of the real world for the purpose of describing objects and events in terms of the attributes composing a variable” (Babbie, 1998:116). For a variable to be clearly and equally understood by many different individuals, it must be accurate, precise, quasi-invariant across observers, provide discrimination from other

variables, and be stable over time. As a result, it is problematic that overall organization performance has been “measured” in scores of research studies by dozens of variables that are generally not strongly correlated over time.

Part of this research involved an analysis of 1,045 articles published in the leading entrepreneurship and management journals between 1996 and 2001. Of these 1,045 articles, 138 purported to use overall organizational performance as the dependent variable. Over 70% of these 138 articles used a financial performance measure as the dependent variable. Further, 46% of these 138 articles used only a single measure, 25% used two measures, and 18% used three measures to represent organizational performance. Overall, a total of 88 different dependent measures were used to represent overall organizational performance in these 138 articles, generally without any support for the validity of the measures utilized. Consequently, it can be inferred from these statistics that there is no consensus in the entrepreneurship and strategic management research conducted over the 5 years with respect to valid measures of organizational performance.

The topic of this research is particularly important for several reasons. First, a multi-dimensional model of organizational performance has not been explicitly studied before. Murphy, Trailer and Hill (1996) examined the dependent measures used in entrepreneurship research and through exploratory factor analysis found nine distinct performance constructs among the more than 50 different dependent variables reported upon. Venkatraman and Ramanujam (1987) empirically demonstrated that growth and profitability were distinctly different measures of performance, but did not attempt to propose a specific model for financial performance measurement. Robinson (1998) empirically tested the relationship between four separate independent variables (stage of the life cycle, industry concentration, entry barriers, and product differentiation) with eight different measures of performance in new venture research and found significantly different results between each independent variable and the eight dependent variables. This further demonstrated the existence of multiple dimensions of performance.

Second, a generalizable and more powerful measurement model of organizational financial performance has significant implications for future research and for reexamining the findings of prior research where less powerful dependent variable measurement models were used. Such a model can help resolve multiple inconsistent theories where differing dependent variables were used.

Finally, a multi-dimensional model of organizational financial performance can significantly improve organizational stakeholders’ understanding of the effectiveness of management. It allows for the measurement of value creation and for reasonable comparison across companies that have chosen different routes to creating value.

Therefore, the objective of this research is to develop a model of organizational financial performance. The model demonstrates that organizational financial performance is a multi-dimensional construct. In addition, it shows that the simultaneous consideration of these multiple dimensions is more appropriate for drawing conclusions about the effectiveness of managerial actions than considering each performance dimension separately.

SELECTED PRIOR STUDIES OF ORGANIZATIONAL PERFORMANCE

Despite the importance of accurately measuring organizational financial performance, there have been very few studies that have directly addressed the question of how organizational financial performance is or should be measured. Perhaps more importantly, none of these studies seem to have significantly influenced how organizational financial performance is actually measured in most of the empirical research that uses this construct as a dependent measure.

In 1985, Rawley & Lipson examined the relationships among several combinations of performance measures to demonstrate that different common measures of financial performance did not represent the same attributes. Of these comparisons, the only overall performance measures that they found to be related to each other at statistically significant levels were the Q ratio versus cash flow return on investment (“CFROI”) adjusted for the Capital Asset Pricing Model (“CAPM”) discount rate, and market-to-book value versus return on investment adjusted for inflation. The Q ratio was proposed by Callard & Kleinman (1985) as a substitute for Tobin’s Q, and is calculated as the ratio of the value of individual business units divided by the inflation adjusted purchase cost of assets. The other measures that they compared were clearly discriminant and do not measure the same construct. Table 1 summarizes their findings for the S&P 400 companies for the period 1982 through 1984.

Table 1 about here

Chakravarthy’s 1986 comparative study of seven “exemplar” firms with seven “maladapted” firms in the computer industry developed an eight variable discriminant function for the two groups. None of the individual profitability measures tested in this research was capable of discriminating between the two groups. The discriminant function developed included multiple dimensions of performance, once again indicating the importance of multivariate measures of organizational performance.

Using confirmatory factor analysis (“CFA”), Venkatraman and Ramanujam (1987) empirically examined the degree of convergence across methods of measuring organizational financial performance and in so doing, demonstrated that sales growth, profit growth, and profitability were discriminate measures of different dimensions of organizational financial performance. They selected these measures based upon a review of the different performance dimensions typically used by different disciplines done by Hofer (1983) and Woo and Willard’s (1983) findings of key dimensions of performance based upon an analysis of PIMS data. The implication of this finding is that in isolation, none of the three variables individually measure the organizational financial performance construct. Consequently, the findings from a study that uses sales growth to represent organizational financial performance should not be equated to findings from a study that uses either profit growth or profitability to represent business economic performance.

Brush and VanderWerf (1992) examined thirty-four different studies in the entrepreneurship literature that explicitly used firm performance as the dependent variable. They found that

thirty-five different measures of performance were used in those studies indicating that researchers perceived many different dimensions of performance, and that there was no agreement on what measures actually represent organizational performance. The most frequently used measures of performance were changes in sales, organizational survival, changes in number of employees, and profitability. Brush and VanderWerf state that they did not attempt to sort out the problem of which performance measures to use. However, they note that the fact that 35 different performance measures were used in just 34 studies indicates that more work needs to be done to identify measures that make sense for use across studies.

Robinson (1995) examined ten different new venture performance measures to determine which individual measure was the most effective in accurately assessing long-term economic value creation. The ten measures studied were change in sales, sales level, return on sales, return on invested capital, return on equity, return on assets, net profit, earnings before interest and taxes, earnings multiples, and shareholder value created. All ten performance measures were tested individually for their relationship with multiple independent variables that had been found in prior literature to have positive relationships to new venture performance. The shareholder value created measure (also commonly known as return to shareholders) was determined to be the most effective measure for effectively differentiating among new venture strategies, the second most effective measure for differentiating among the structure of the new venture's entered industry, and the most effective measure in differentiating among the interactions between new venture strategies and the structure of the industry the new venture entered. The fact that the different performance measures of overall new venture performance resulted in significantly different r-squares implies that the variables do not measure the same things.

Murphy, Trailer and Hill (1996) examined the variables used to measure organizational performance in entrepreneurship research in the years 1987 through 1993. They identified 51 articles published in the top entrepreneurship and strategic management journals that explicitly used firm performance as a dependent variable. They found, consistent with Brush & VanderWerf (1992) and Cooper (1993), that there was no consistency in the variables used to measure new venture performance. In total, they identified 71 different dependent variables used to measure performance in the 51 articles.

Murphy et al. then examined 19 financial variables from a sample of 995 public firms with 500 or fewer employees. They found that less than half of the intercorrelations between performance measures were significant, indicating that these variables measured different dimensions of performance. More than 25% of the significant correlations of performance measures were negative. Murphy, et al. concluded that the "...relationship between a given independent variable and performance is likely to depend upon the particular performance measure used." They further concluded "...research finding support for an effect on one performance variable cannot justify the assumption that the effect is similar across other measures of performance (1996: 21)." Their study also found that the performance measures tested failed to meet the requirements of convergent and discriminant validity necessary to validate a one-dimensional performance construct (Campbell & Fiske, 1959).

Next, Murphy et al. performed an exploratory factor analysis on the 19 variables, which yielded 9 factors that explained over 70% of the variance in the performance measures. In an attempt to more fully examine the results obtained by Murphy et al., we performed a confirmatory factor

analysis of the nine factors identified in their research, using LISREL 8.12 as suggested by Bollen (1989). The covariance data reported in the 1996 study was as the basis for the analysis.

The results of this CFA analysis indicated that the factors determined by Murphy et al. did not fit the data. The model yielded Chi-square = 1292 with 127 degrees of freedom ($p < 0.0001$), Bentler and Bonnet normed fit index of .727 and a non-normed fit index of .657. This indicates that while the variables did load into factors, these factors may not be supported by the data. This is possible since exploratory factor analysis will force variables into the number of factors specified, even though the factors may not have the best possible fit for the data. Even if the data had fit the model, because the analysis was an exploratory factor analysis, there was no theoretical support for the identified constructs. Consequently, the variables within each factor, as determined by the exploratory factor analysis, fail the test for convergent validity using confirmatory factor analysis, and they also did not have any face validity.

It is clear from the prior empirical studies that there has been no consistency in the measures used to represent the construct of overall organizational performance in strategic management or entrepreneurship research. Further, prior empirical research has demonstrated that there are multiple dimensions to the performance construct. While Robinson (1995) found that return to shareholders was the most powerful individual performance with respect to new venture performance among companies that have undergone initial public offerings, these findings cannot be reasonably generalized to studies that use different samples. In short, there continues to be no conclusive research that has identified a “best” measure of overall organizational performance, nor has a measurement model that accurately represents the construct yet been developed.

METHODOLOGY FOR DEVELOPING & TESTING A MODEL OF ORGANIZATIONAL FINANCIAL PERFORMANCE

Since no prior research empirically established the domain of organizational financial performance, this research was by necessity exploratory in nature. The process employed in this research for inferring a model of financial performance included four phases. First, a sample of public companies was segregated into high, medium, and low performers based upon both annual and three-year financial performance, as indicated by their return to shareholders over the specified period of time. Return to shareholders was previously found by Robinson (1995) to be the most powerful measure of organizational performance. Second, the high and low performing groups were compared using the financial measures most commonly used in past research and/or discussed in the entrepreneurship and strategic management literatures, for the purpose of identifying the specific measures that differentiated the two groups. Third, the variables identified that differentiated between high and low performing companies were grouped into constructs. Finally, the validity of these constructs was tested.

Developing a Sample

The companies in the Standard and Poor's 1500 at December 31, 2002 (a combination of the Standard and Poor's 500, Standard and Poor's Mid Cap 400, and the Standard and Poor's Small Cap 600 indices) was the population of public companies used for this research. These companies include a wide cross-section of industries, organizational sizes, and organizational

ages. Four years of financial data was collected from the Standard and Poor's Compustat[®] database. One and three-year performance information was calculated from this data and any firm-year of data that was incomplete or contained significant outliers was eliminated from the final sample. The final sample included 2,894 individual firm-years of data and 925 three-year periods of data.

Developing a Sample of High and Low Financial Performing Companies

The individual annual firm year and three-year periods in the sample were classified as high, medium, or low financial performance based upon return to shareholders. A firm was classified as high performing if its standardized value of return to shareholders was one or greater. A firm was classified as low performing if its standardized value of return to shareholders was negative one or greater. All other firms were classified as medium performing.

A total of 309 firm years were classified as "high", 321 firm years were classified as "low", and the remaining 2,264 firm years were classified as "medium". In the case of three-year period data, a total of 124 three-year periods were classified as "high", 143 three-year periods were classified as "low", and the remaining 658 three-year periods were classified as "medium".

Comparing the High and Low Financial Performing Companies

The two samples of high and low performing companies were compared with respect to 20 of the financial measures most commonly used in past entrepreneurship and strategic management research and from the literatures of these fields. These measures were compared using *t* tests to determine if there was a statistically significant difference between the high and low performing companies with respect to each measure.

Those measures that indicated a statistically significant difference between the groups were retained for further evaluation in this research. Variables that did not discriminate between high and low financial performing companies were not utilized further. Each variable that was included in this research was evaluated both as a static value and for the change in the value over the period of interest to examine the relative information content of static vs. change scores.

Testing a Model of Overall Organizational Financial Performance

Based upon the comparison of variables for their ability to discriminate between high, medium, and low performing companies, a set of variables was selected to measure each financial construct. The grouping of variables into financial constructs was based upon a review of accounting and finance literature (see Breley, Myers & Marcus, 2001; Copeland, Koller & Murrin, 2000; Penman, 2001). The combination of theoretical constructs and the variables used to represent the constructs became the model of organizational financial performance tested in the next stage of this research.

The validity of the constructs was tested using confirmatory factor analysis ("CFA") through the use of AMOS 5.0 structural equation modeling software (Bollen, 1989; Venkatraman & Ramanujam, 1987). The CFA framework uses a maximum likelihood approach to providing a statistical analysis of the entire validity of a construct and a decomposition of the measurement variance into its constituent components (Bagozzi, Yi, & Phillips, 1991). The proposed

constructs and their measures were tested for both discriminant and convergent validity. Those constructs or measures that were not found to be valid were eliminated from the model of organizational financial performance and a revised model was proposed.

RESULTS

Financial Measures That Discriminate Between High and Low Performing Companies

This research found that, for annual periods, thirty five of the forty financial performance measures tested discriminated between high and low performing companies at $p < .10$, using market adjusted return to shareholders as the basis for classification. For three-year periods, thirty two of the forty financial performance measures tested discriminated between high and low performing companies at $p < .10$. Table 2 summarizes the results of the t tests for the variables that did and did not discriminate between high and low performing companies for both annual and three-year periods.

Table 2 about here

One paradox of management research described by Cameron (1986) was that most empirical studies tend use measures and methods that explain average performance, while the primary focus should be on understanding what makes firms either very successful or very unsuccessful. It is, therefore, essential to select performance metrics that can discriminate sufficiently among companies that perform at different levels of performance. This study identified thirty two annual and twenty seven three-year financial performance measures that discriminated between high and low performing companies at $p < .01$ with respect to market adjusted return to shareholders. Of these measures, those that provided the most information about the return to shareholders referent with respect to the sample of all companies, not just high and low performing companies, should provide the most statistical power for research where shareholder value creation is the phenomenon of interest.

Tests of an Annual Model of Organizational Financial Performance

Figure 1 depicts the initial set of constructs that was tested for both convergent and discriminant validity for annual data. AMOS 5.0 software was used to test whether the annual data fit the proposed model. Constructs with only one observed measure were constrained to exactly equal the value of the measure, as suggested by Bollen (1989). The variance of each construct was constrained to unity so that the parameters for each observed variable could be freely estimated.

Figure 1 about here

The assumptions of structural equation modeling require that the estimated variance of each measure must be positive and the covariance matrices must be positive definite. Three fit indices, as recommended by Arbuckle and Wothke (1999), were chosen to determine if the data fit the model. The three indices included the comparative fit index (CFI; Bentler, 1990), the Tucker-Lewis coefficient (TLI; Bentler & Bonnet, 1980), which is also known as the Bentler and Bonnet non-normed fit index (NNFI), and the root mean square error of approximation (RMSEA; Browne & Cudeck, 1993). Arbuckle and Wothke (1999) suggest that a value of .90 or greater for both the CFI and the TLI indicates a reasonable fit of the data with a model and, an RMSEA value of about .08 or lower, but certainly no greater than .10 indicates an acceptable error rate for a model. Accordingly, a model that met all three criteria was considered to have an acceptable fit.

A random sample of 150 high performing firms and 150 low performing firms was used to test the model. This annual data did not fit the model as proposed in Figure 1, since the covariance matrix for the constructs that comprise the model was not positive definite. This indicates that there was a specification error in the model or that the sample size was too small (Jöreskog & Sörbom, 1996). As the sample in this case had 300 observations, it is reasonable to conclude that the model had a specification error.

An examination of the correlations between variables across constructs revealed that residual income return on investment (“RI ROI”) was more highly correlated with the profitability construct than with residual income (“RI”) in the economic value construct. The model specification error was eliminated by moving the RI ROI measure to the profitability construct. The revised model had $\chi^2 = 2213.4$ with $df = 334$ and $n = 300$. The CFI for the model was .83, the TLI was .78, and the RMSEA was .14. All three measures indicated that the data did not acceptably fit the model. Accordingly, the measures included in the model were reexamined to determine which should be kept and which should be excluded from a revised model.

Figure 2 about here

Figure 2 depicts the revised annual model of organizational financial performance that met the test for convergent validity of the measures with the separate constructs. As a result of these changes in the specification of the model, the data fit the revised ten-construct model. The model had $\chi^2 = 405.4$ with $df = 130$ and $n = 300$. The CFI for the revised model was .95, the TLI was .93, and the RMSEA was .08. All three measures indicate that the data fits the model. Accordingly, the model met the requirements of convergent validity (Arbuckle and Wothke, 1999; Bollen, 1989; Jöreskog & Sörbom 1996).

Using a confirmatory factor analysis framework, discriminant validity is achieved when the correlations between the separate constructs are statistically significantly lower than unity (1.0) (Bollen, 1989). Any correlations that appeared “high” were tested by setting the correlation between the two constructs equal to unity, and then testing the statistical significance of the change in χ^2 between the two models.

For the revised model, only two constructs, growth and growth change, were correlated in excess of 0.60. Accordingly, the correlation between the two constructs was constrained to unity and the model was retested. The result was $\chi^2 = 414.0$ with $df = 131$. The change in χ^2 was 8.6 with $df = 1$ and $p < .01$. Accordingly, for the revised model the constructs were found to be discriminant. All other combinations of constructs had correlations below 0.52, which indicates that all constructs met the requirements for discriminant validity.

In summary, ten of the original thirteen constructs and twenty of the original thirty measures were retained in the annual financial performance measurement model. It was also demonstrated that these constructs were discriminant and that the measures of the constructs met the test for convergent validity.

Tests of a Three-Year Model of Organizational Financial Performance

Figure 3 presents a diagram of the initial set of financial performance constructs and their corresponding measures, for three-year data. The convergent validity of the measures for each construct was tested using confirmatory factor analysis, as was done with the annual data model.

Figure 3 about here

The three-year data did not fit the proposed model. The model had $\chi^2 = 1013.2$ with $df = 307$ and $n = 120$. The fit indices were CFI = .81, TLI = .74, and RMSEA = .14. There were specification errors in the model, as indicated by estimated negative residuals for four measures including ROI, CROI, GR Sales, and COC. Consequently, adjustments to the base model were necessary, as was the case with the annual data model. Accordingly, the measures included in the three-year model were reexamined in order to determine which should be retained in a revised model.

As a result of the changes in the model specification, the data fit the revised, ten-construct model depicted in Figure 4. The model had $\chi^2 = 212.1$ with $df = 137$ and $n = 120$. The fit indices were CFI = .93, TLI = .91, and RMSEA = .07. All three measures indicate that the data fits the model. Further, modification indices do not indicate any significant improvement in fit would be achieved by including a measure with an additional construct. Accordingly, the measures meet the requirements for convergent validity (Arbuckle and Wothke, 1999; Bollen, 1989; Jöreskog & Sörbom, 1996).

Figure 4 about here

As with the testing of the measurement model for annual data, any correlations between constructs that appeared “high” were tested by setting the correlation between the two constructs equal to unity, and then testing the statistical significance of the change in χ^2 between the two models. Two pairs of constructs appeared to possibly be “highly” correlated. They were the (1) change in profitability and the change in survival and (2) the cost of equity capital and the change in survival.

First, the correlation between the change in profitability and the change in survival was constrained to unity, and the model was retested. The result was $\chi^2 = 251.1$ with $df = 138$. The change in χ^2 was 39 with $df = 1$ and $p < .001$. Accordingly, the constructs were deemed to be discriminant. Next, the correlation between the cost of equity capital and the change in survival was constrained to unity and the model was retested. The result was $\chi^2 = 230.0$ with $df = 138$. The change in χ^2 was 17.9 with $df = 1$ and $p < .001$. Accordingly, for the revised model, the constructs were deemed to be discriminant.

In summary, ten of the original thirteen constructs and twenty of the original twenty nine measures were retained in the measurement model. It was demonstrated that these ten constructs were discriminant and that the revised set of measures of the constructs met the test for convergent validity.

Limitations of this Research

Overall organizational performance is a multi-dimensional construct. This research only focused on one of the primary dimensions, namely financial performance. Operational and stakeholder dimensions were not examined. As a consequence, the relative importance of financial performance to the two other performance dimensions was not examined. A model of overall organizational performance that includes all major performance dimensions might require a different set of financial dimensions or different measures of the identified dimensions due to overlapping information across the higher order constructs.

An additional limitation of the research design was the selection of only two timeframes, one and three years. While these two timeframes are those most frequently used in entrepreneurship and strategic management research, 21% of the empirical studies summarized in this research used other timeframes, most notably single point in time measures and five-year measures. Also, the annual and three-year models of financial performance developed in this research were not the same, implying that different dimensions of financial performance are more or less important at different times. Accordingly, the generalization of the results of this research to other timeframes requires additional testing.

A final limitation of the research design of the study was the omission of risk from consideration in financial performance model. While financial risk is indirectly included through the calculation of the cost of equity capital, strategic risk was not calculated. Bromiley (1990) suggested that risk should be a component of the analysis of organizational performance. However, it should be up to the discretion of the researcher whether it is appropriate to capture the effects of risk as an independent measure or as a component of the dependent measure.

The sample utilized in this study limits the generalization of the findings in several ways. These limitations include: (a) only U.S. companies were included in the sample; (b) only publicly traded companies were included; (c) financial services firms such as banks and insurance companies were disproportionately eliminated from the sample because they did not report sufficient information to calculate the measures tested in this research; (d) only one three-year period was used to develop and test the three-year financial performance model; (e) the annual data was from the same timeframe as the three-year data; (f) one primary source was used to gather most of the financial data; and (g) the three-year sample did not include any companies that went out of business during the three-year period.

SUMMARY AND CONCLUSIONS

For over fifty years, management scholars have suggested that organizational performance is a multi-dimensional construct. However, this is the first study that has undertaken to empirically identify both distinct dimensions of organizational financial performance and the measures that represent those dimensions. The identification of different dimensions and measures of financial performance for annual and three-year timeframes is also a unique contribution of this research.

Implications for Future Research

This research empirically demonstrated that organizational financial performance is a multi-dimensional construct. Consequently, if the unit of analysis for a study is the entire organization, and if the phenomenon of interest is organizational financial performance, it is incumbent upon the researcher to consider the effects of the independent variable on multiple performance dimensions simultaneously.

However, if only one dimension of organizational performance is examined in a study, then it is inappropriate to claim to be studying the effects of the independent variables on “overall organizational performance”. In such situations, it would be more appropriate to specify the specific dimensions of organizational performance being studied, which would provide better context and understanding to readers of the research.

This research identified ten separate performance dimensions for both annual and three-year timeframes as well as multiple measures of these constructs. The theory being tested should help guide the researcher in selecting the dimensions of organizational performance to examine. Specifically, those dimensions of organizational performance that are hypothesized to create value for the constituents of interest should be used as the dependent variables. In general, dependent measures representing the phenomenon of interest should be selected with great care and a full explanation for the selection criteria should be provided for users of the research.

Implications for Management Practice

Potentially the most important finding for practitioners is the fact that the changes in performance metrics are separate constructs from the static measures. Top management already places some emphasis on changes in performance metrics as demonstrated by the content of management discussion and analysis (MD&A) sections in annual reports and SEC filings. Typically, the change in performance period-over-period is the focus of MD&A. However, while changes may

be explained post hoc, management planning should focus on actions that accomplish organizational change.

Those performance metrics that have been shown in this research to discriminate between high and low performing companies should receive the primary attention of management and users of financial statements. Those companies that attain and sustain competitive advantage in the market do not strive to be average. Therefore, the metrics they use to gauge performance should focus on outcomes that set them apart from the competition.

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Table 1 Summary of Relationships Among Selected Performance Measures from Rawley and Lipson (1985)

Variables Compared	R ²
Price-to-earnings ratio vs. EPS growth	.12
Price-to-book ratio vs. ROE less CAPM cost of equity	.19
Price-to-book ratio vs. Return on capital employed – CAPM cost of capital	.34
Q ratio vs. CFROI less discount rate	.65
Market-to-book ratio vs. ROI less inflation	.71

Table2 Measures That Discriminate Between High and Low Performing Companies by Construct

Variable	Static Measures		Change Scores	
	Annual	Three-Year	Annual	Three-Year
<u>Profitability</u>				
Return on Assets	**	**	**	**
Return on Equity	**	**	**	**
Return on Sales	**	**	**	**
Return on Investment	**	**	**	**
EBITDA Return on Investment	**	**	**	**
Operating Margin	**	**	**	**
<u>Growth</u>				
Growth Rate of Sales	**	**	**	*
Growth Rate of Operating Expenses	**	*	**	**
Growth Rate of Total Assets	**	**	**	**
Growth Rate of Employees	**	*	**	NS
<u>Cash Flow</u>				
Growth Rate of Operating Cash Flow	*	*	*	NS
Operating Cash Flow to Equity	**	**	NS	**
Free Cash Flow to Equity	NS	NS	NS	NS
<u>Liquidity</u>				
Liabilities to Total Assets	NS	NS	NS	**
<u>Survival</u>				
Altman's Z Score	**	NS	**	**
<u>Efficiency</u>				
Asset Turnover	+	NS	**	**
<u>Economic Value</u>				
Residual Income	**	+	**	**
Residual Income Return on Investment	**	**	**	**
<u>Cost of Equity Capital</u>				
Cost of Equity Capital	**	**	**	**
<u>Market</u>				
Price to Book Ratio	**	NS	**	**

** $p < .01$ * $p < .05$ + $p < .10$ NS $p > .10$

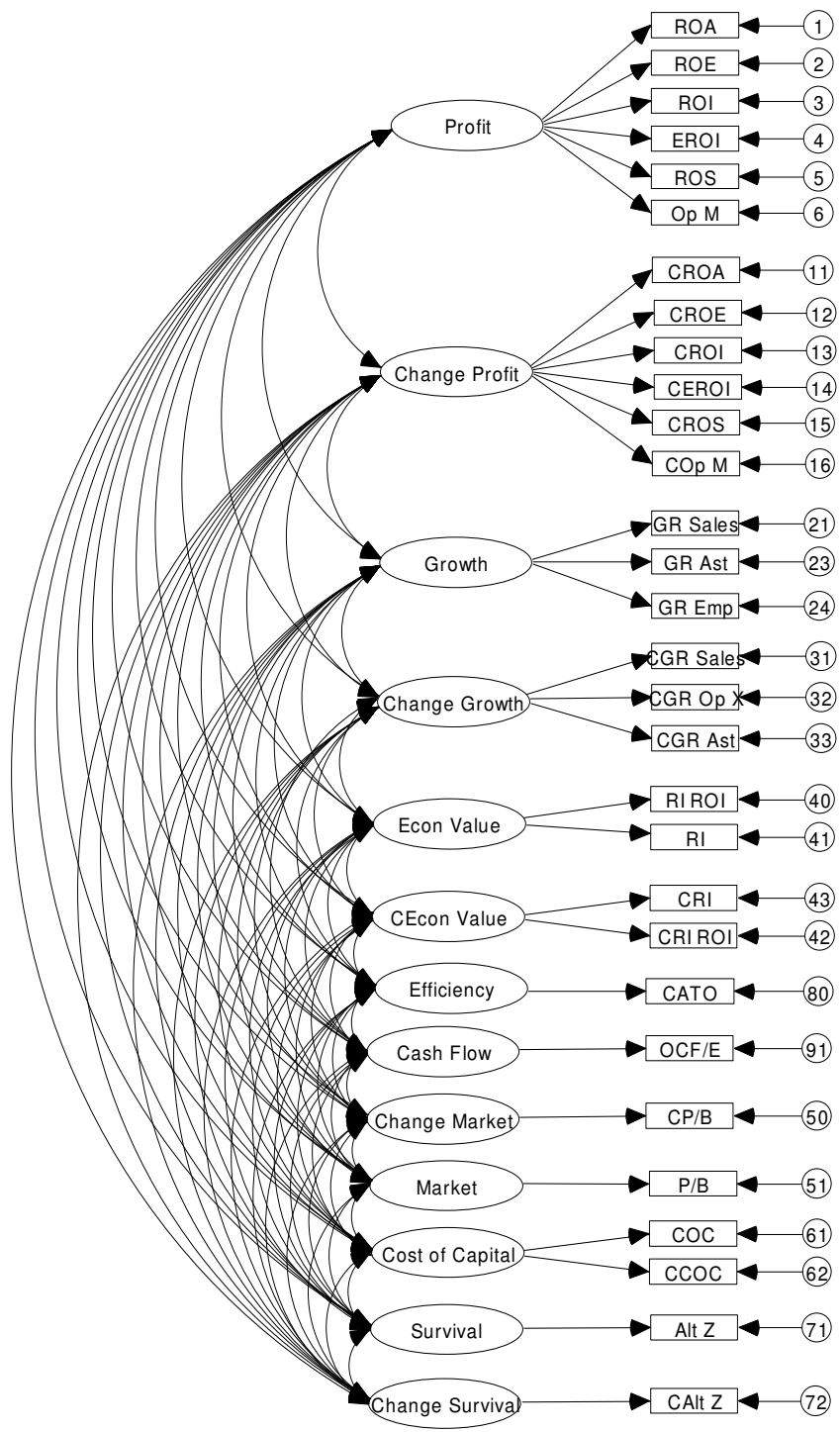


Figure 1 Proposed Constructs and Measures for a Model of Financial Performance for Annual Data

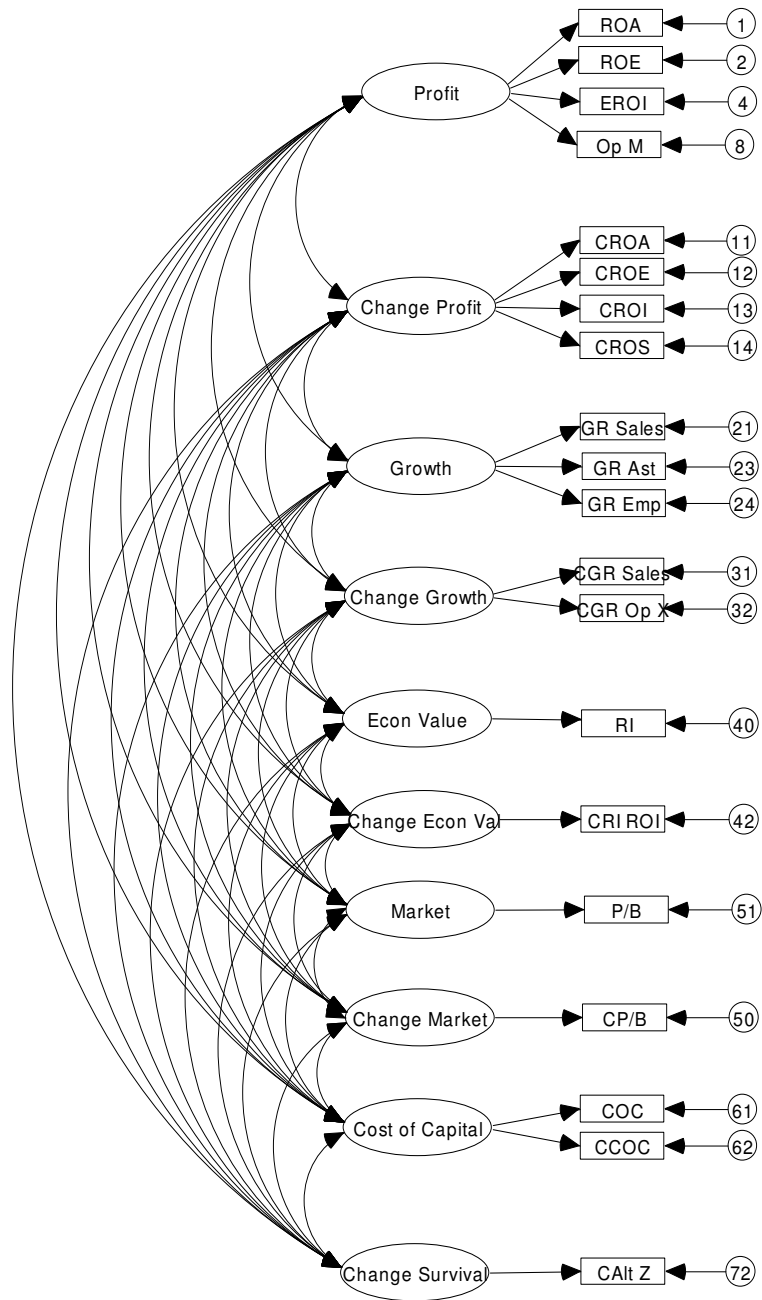


Figure 2 Revised Constructs and Measures for a Model of Financial Performance for Annual Data

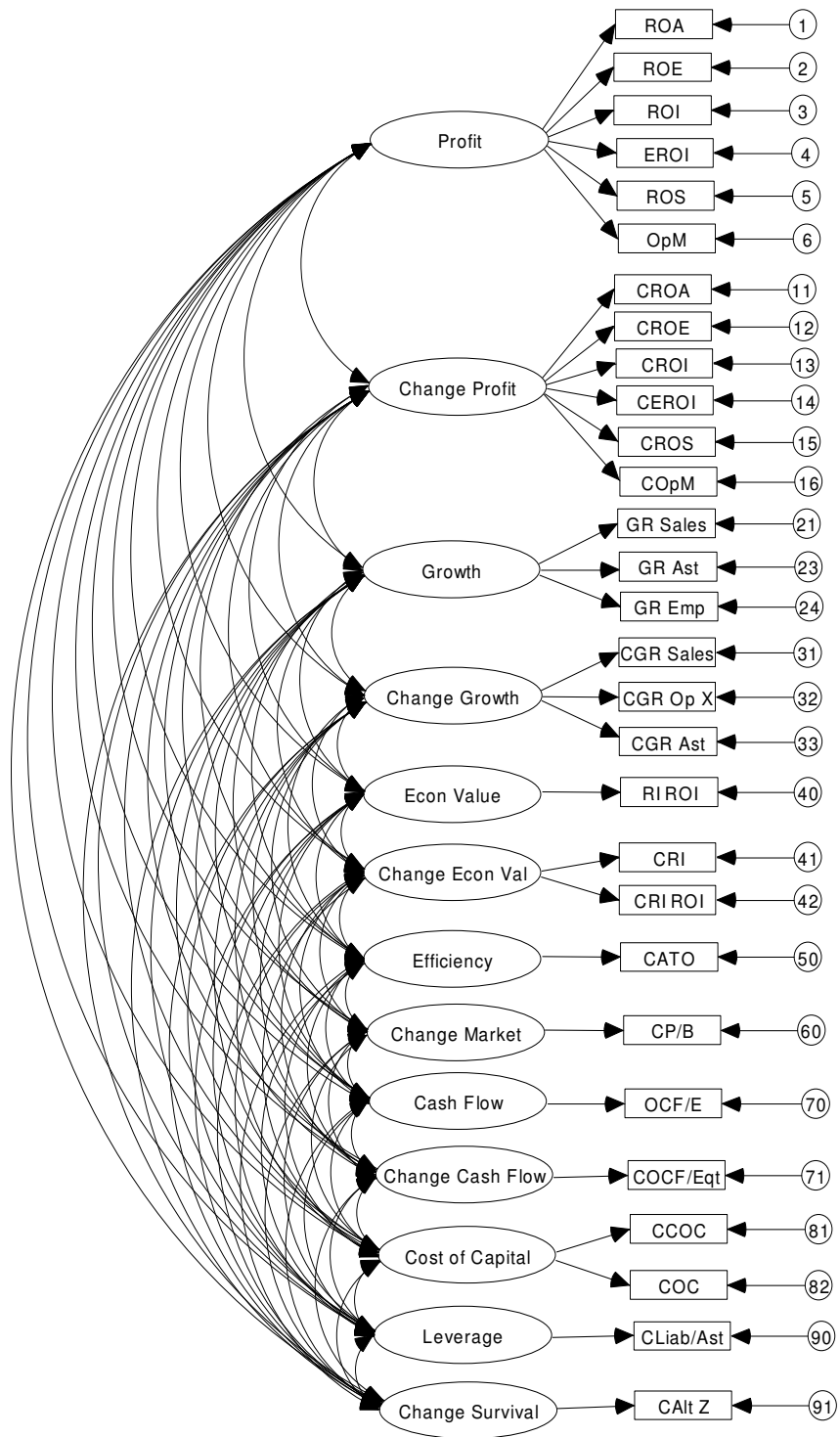


Figure 3 Proposed Constructs and Measures for a Model of Financial Performance for Three-Year Data

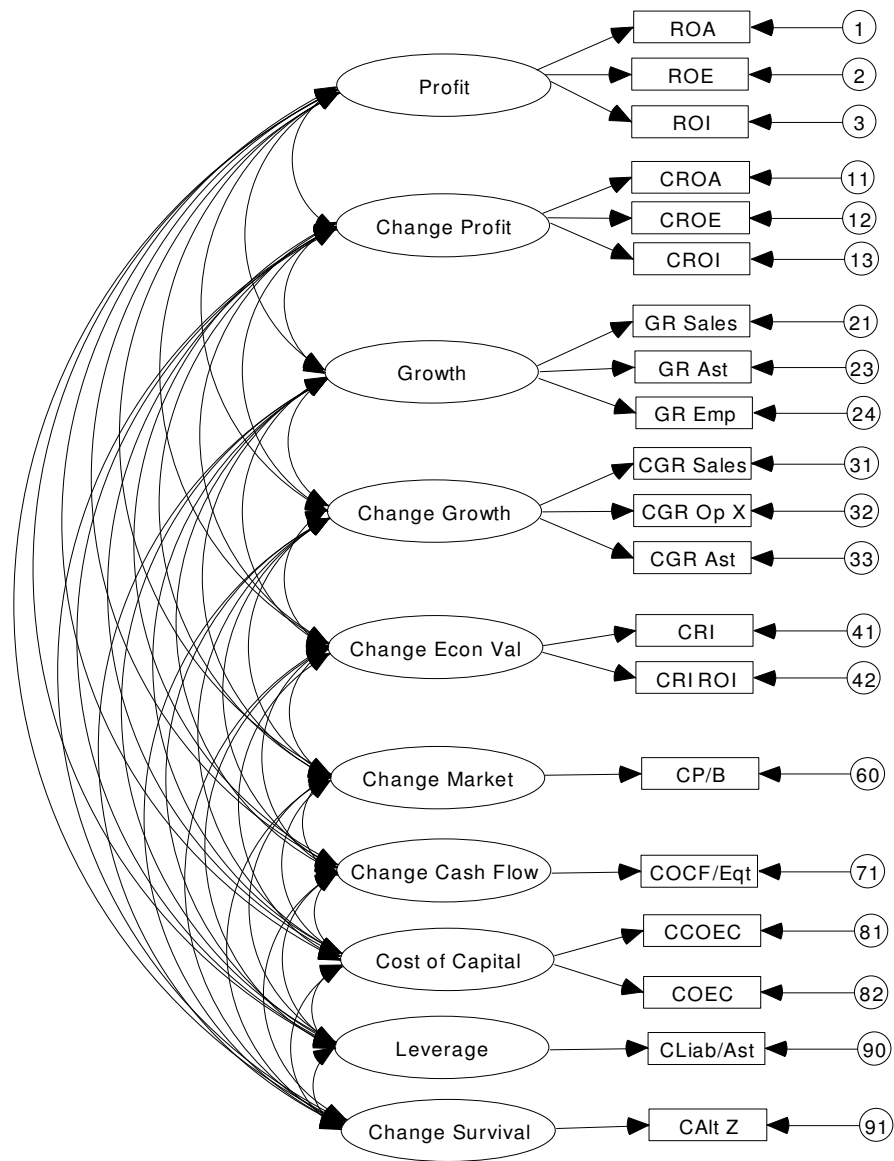


Figure 4 Revised Constructs and Measures for a Model of Financial Performance for Three-Year Data